

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

- 5     1 (currently amended): A nitride based light emitting diode (LED) comprising:  
a substrate;  
a light emitting stacked structure formed over the substrate;  
a nitride based dual dopant contact layer formed over the light emitting stacked  
structure, the nitride based dual dopant contact layer comprising ~~a plurality of~~  
10     ~~p-type dopants and a plurality of n-type dopants~~ at least a p-type dopant and an  
n-type dopant, and a material of the p-type dopant being different from a  
material of the n-type dopant; and  
a transparent conductive oxide layer formed over the nitride based dual dopant contact  
layer.
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- 2 (currently amended): The LED of claim 1, wherein the nitride based dual dopant  
contact layer is made of  $\text{Al}_a\text{In}_b\text{Ga}_{1-(a+b)}\text{N}$  ( $0 \leq a \leq 1$ ;  $0 \leq b \leq 1$ ; and  $0 \leq a+b \leq 1$ )  
~~AlInGaN-based material~~, the transparent conductive oxide layer is made of  
indium-tin oxide (ITO), cadmium-tin oxide, antimony-tin oxide (ATO), zinc  
20     oxide (ZnO), or zinc-tin oxide.
- 3 (previously presented): The LED of claim 1, wherein the nitride based dual dopant  
contact layer is formed by adding the p-type dopants and the n-type dopants  
together through an epitaxy growth.
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- 4 (previously presented): The LED of claim 1, wherein the nitride based dual dopant  
contact layer is formed by: providing a second conductive type contact layer on  
the light emitting stacked structure; then providing a first conductive type  
contact layer on the second conductive type contact layer; and then cooling the

LED through a cooling rate less than 40°C/min.

5 (previously presented): The LED of claim 1 wherein the substrate is an insulating substrate, the light emitting stacked structure comprising:

5 a buffer layer formed over the insulating substrate;

a first conductivity type contact layer formed over the buffer layer, the first conductivity type contact layer being made of  $\text{Al}_{x1}\text{In}_{y1}\text{Ga}_{1-(x1+y1)}\text{N}$  ( $0 \leq x1 \leq 1$ ;  $0 \leq y1 \leq 1$ ; and  $0 \leq x1+y1 \leq 1$ );

10 a multiple quantum well light emitting layer formed over the first conductivity type nitride based contact layer; and

a second conductivity type contact layer formed over the multiple quantum well light emitting layer, the second conductivity type contact layer being made of  $\text{Al}_{x2}\text{In}_{y2}\text{Ga}_{1-(x2+y2)}\text{N}$  ( $0 \leq x2 \leq 1$ ;  $0 \leq y2 \leq 1$ ; and  $0 \leq x2+y2 \leq 1$ ).

15 6 (previously presented): The LED of claim 5, wherein the insulating substrate is made of one material selected from a material group consisting of sapphire,  $\text{LiGaO}_2$ , and  $\text{LiAlO}_2$ .

20 7 (original): The LED of claim 5, wherein the multiple quantum well has  $r$  InGaN quantum wells and  $(r+1)$  InGaN barriers, each InGaN quantum well is sandwiched in between two InGaN barriers, each InGaN quantum well is fabricated by  $\text{In}_e\text{Ga}_{1-e}\text{N}$ , and each InGaN barrier is made of  $\text{In}_f\text{Ga}_{1-f}\text{N}$ ,  $r \geq 1$ , and  $0 \leq f < e \leq 1$ .

25 8 (original): The LED of claim 5 further comprising a first conductivity type cladding layer interposed between the first conductivity type contact layer and the multiple quantum well light emitting layer and the first conductivity type cladding layer is made of  $\text{Al}_x\text{Ga}_{1-x}\text{N}$ , and  $0 \leq x \leq 1$ .

30 9 (original): The LED of claim 5 further comprising a second conductivity type cladding layer interposed between the second conductivity type contact layer

and the multiple quantum well light emitting layer and the second conductivity type cladding layer is made of  $\text{Al}_z\text{Ga}_{1-z}\text{N}$ , and  $0 \leq z \leq 1$ .

10 (previously presented): The LED of claim 1, wherein the substrate is a conductive  
5 substrate.

11 (previously presented): The LED of claim 10 wherein the conductive substrate is made of one material selected from a material group consisting of GaN, SiC, Si, AlN, ZnO, MgO, GaP, GaAs, and Ge.

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12-18 (cancelled).

19 (currently amended): The LED of claim 1 wherein the nitride based dual dopant contact layer is made of  $\text{Al}_a\text{In}_b\text{Ga}_{1-(a+b)}\text{N}$  ( $0 \leq a \leq 1$ ;  $0 \leq b \leq 1$ ; and  $0 \leq a+b \leq 1$ )  
15 ~~AlInGaN-based material~~; the n-type dopants are made of Si, Ge, Sn, Te, O, S, or C; and the p-type dopants are made of Mg, Zn, Be, or Ca.

20 (new): A nitride based light emitting diode (LED) comprising:  
a substrate;  
20 a light emitting stacked structure formed over the substrate;  
a nitride based dual dopant contact layer formed over the light emitting stacked structure, the nitride based dual dopant contact layer being made of  $\text{Al}_a\text{In}_b\text{Ga}_{1-(a+b)}\text{N}$  ( $0 \leq a \leq 1$ ;  $0 \leq b \leq 1$ ; and  $0 \leq a+b \leq 1$ ) and comprising at least a p-type dopant and an n-type dopant, a material of the p-type dopant being  
25 different from a material of the n-type dopant; and  
a transparent conductive oxide layer formed over the nitride based dual dopant contact layer.

21 (new): A nitride based light emitting diode (LED) comprising:  
30 a substrate;  
a light emitting stacked structure formed over the substrate;

- a nitride based dual dopant contact layer formed over the light emitting stacked structure, the nitride based dual dopant contact layer comprising at least a p-type dopant and an n-type dopant, the n-type dopant being made of Si, Ge, Sn, Te, O, S, or C and the p-type dopant being made of Mg, Zn, Be, or Ca; and
- 5 a transparent conductive oxide layer formed over the nitride based dual dopant contact layer.